PRO2K-2N INTELLIGENT RELAY

USER MANUAL
VERSION 4.2
MANUAL No: APOO3/2012

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RELAY SET UP PROCEDURE

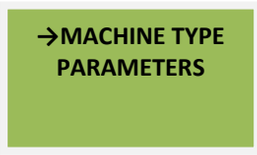
1) POWER UP THE RELAY

2) THE DISPLAY SHALL COME ON AND SHOW:-

NOTE: ALL RELAYS SHALL HAVE SOME MACHINE TYPE AND PARAMETERS PROGRAMED INTO THE MENU AFTER TESTING IN THE FACTORY.
PARAMETERS CAN ONLY BE CHANGED IF DISPLAY SHOWS **"MACHINE OFF"**.

3) YOU NEED TO PROGRAM TO SUIT THE APPLICATION, AS BELOW:-

(A) SELECT PARAM KEY. CURSOR SHALL SHOW MACHINE TYPE AND PARAMETERS.



(B) SELECT MACHINE TYPE AND **'SAVE'**. SCREEN SHALL SHOW PASSWORD.

(C) SELECT MACHINE TYPE BY PRESSING **'UP'** OR **'DOWN'** AND THEN **'SAVE'.**
(ALL MACHINE TYPES AS PER LIST ON PAGE 6 ITEM 9).

(D) ENTER YOUR 4 DIGIT PASSWORD AND PRESS **'SAVE'**. MACHINE TYPE SHALL SHOW ON SCREEN. NOW YOU HAVE SELECTED MACHINE TYPE YOU NEED TO SET PARAMETERS.

(E) PRESS 'PARAM' KEY AND MOVE CURSOR **'DOWN'** TO PARAMETERS AND **'SAVE'**.

(F) ENTER YOUR 4 DIGIT PASSWORD AND **'SAVE'**. YOU CAN NOW ENTER ALL PARAMETERS AS PER LIST PAGE 4 ITEM 1.

(G) ALL PARAMETERS CAN BE VIEWED BY PRESSING **'LEFT'** OR **'RIGHT'** KEY.

eg:

BY PRESSING UP OR DOWN THE E/L TRIP LEVEL CAN BE SET BETWEEN 60 AND 230mA IN INCREMENTS OF 1mA. SELECT TRIP LEVEL AND 'SAVE'.
DO THE SAME FOR ALL PARAMETERS AND **'SAVE'**.

(H) THE MACHINE IS NOW READY TO START. AFTER STARTING ALL ACTUAL MONITORING VALUES CAN BE SEEN BY PRESSING THE **'MENU'** KEY, AS PER MONITORING LIST PAGE 5 ITEM 6.

PRO2K2 SETTING

	No: PARAMETES	DESCRIPTION	SCALE	INCREMENTS
ITEM (A)	(1) E/Leakage	{Earth leakage}	[60ma to 230ma]	(1)
	(2) L/Out	{Lock out}	[10kohm to 70kohm]	(10)
	(3) O/L	{o/l type setting}	[Instant. or Thermal]	
	(4) O/L Reset	{o/l reset mode}	[Auto or Manual]	
	(5) Pois	{Prevention of inadvertent start}	[Enable or Disable]	
	(6) O/L Class	{o/l class curve}	[1 or 25]	(1)
	(7) S/Circuit	{Short circuit setting}	[200% to 1000%]	(100)
	(8) CT Ratio	{ct ratio}	[See CT Ratios Below]	
	(9) F/Load I	{Full load current}	[0 to 1 X ct ratio]	
	(10) Under I	{Under current}	[0 to F/Load I]	
	(11) Pilot Start	{Type of starting}	[Local or Remote]	
	(12) Sequence Time	{Sequencing Time}	[0s-200s][0ms-20000ms]	(1)
	(13) Anti-Inch Time	{Anti-Inch Time}	[0sec to 255sec]	(1)
	(14) Password (1)	{User Machine Type Password (1)}	[0 to 9]	(1)
	(15) Password (2)	{User Machine Type Password (2)}	[0 to 9]	(1)
	(16) Password (3)	{User Machine Type Password (3)}	[0 to 9]	(1)
	(17) Password (4)	{User Machine Type Password (4)}	[0 to 9]	(1)
	(18) Password (5)	{User Parameters Password (1)	[0 to 9]	(1)
	(19) Password (6)	{User Parameters Password (2)	[0 to 9]	(1)
	(20) Password (7)	{User Parameters Password (3)	[0 to 9]	(1)
	(21) Password (8)	{User Parameters Password (4)	[0 to 9]	(1)

	No: FAULTS	RESET FROM KEYPAD	POWER UP
ITEM (B)	(1) Phase Unbalance	[Yes]	[Yes]
	(2) Overload Trip	[Yes]	[Yes]
	(3) Under Current	[Yes]	[Yes]
	(4) Short Circuit (s/c latch remains)	[No]	[Yes]
	(5) Local Remote Fault	[Yes]	[Yes]
	(6) Earth Leakage Fault	[Yes]	[Yes]
	(7) Core Balance Fault	[Yes]	[Yes]
	(8) Lockout Fault	[Yes]	[Yes]
	(9) Loss of Vacuum / Frozen Contactor	[Yes]	[No]
	(10) Memory Fault	[No]	[No]
	(11) POIS Fault	[Yes]	[Yes]
	(12) Comms Fault	[No]	[Yes]

Note: Memory Fault can only be reseted by Loading Parameters, correcting them and then Saving them.
Comms Fault auto resets itself assuming comms port and cabling is OK.
P.O.I.S. fault (Prevention Of Inverted Start) can also be reset from remote Stop pushbutton.

FAULT HISTORY

(1) Press the arrow key up (↑) together with the arrow key down (↓). To activate fault history.
eg: (Fault:1) **"E/L Trip"**.
(2) Press the **(←)** key to page left.
(3) Press the **(→)** key to page right. Fault (1) is the most recent fault. Press the **'Menu'** key to go back to main menu.

CT RATIOS

ITEM (C) **50:1/100:1/200:1/300:1 /400:1/800:1/1000:1**

50:1	MAX FLC = 50A	INCREMENTS =	1A
100:1	MAX FLC = 100A	INCREMENTS =	2A
200:1	MAX FLC = 200A	INCREMENTS =	4A
300:1	MAX FLC = 300A	INCREMENTS =	6A
400:1	MAX FLC = 400A	INCREMENTS =	8A
800:1	MAX FLC = 800A	INCREMENTS =	16A
1000:1	MAX FLC = 1000A	INCREMENTS =	20A

MONITORING

ITEM (D) By pressing the **'Menu'** key one can monitor, one of the following:-

(1) CT1, CT2 & CT3 actual current motor load.
(2) Overload Status (0% up to 100%) 100% = O/L Trip.
(3) Earth Leakage currents.
(4) Lock Out ohms.
(5) Pilot PR ohms.
(6) Pilot CR ohms.
(7) Supply volts in percentage (%).
(8) Timers (Sequence ON/OFF and Anti-Inch ON/OFF).
(9) PRO2K-2 Control Version.
(10) PRO2K-2 Keypad Version.
(11) Machine Status ON/OFF.
(12) Fault Status.
(13) Machine Type.

ENTERING PARAMETERS

ITEM (F) (1) Press the **'PARAM'** key. The display will now come up with a four digit password to be entered.
(2) Press the **(↑)** or the **(↓)** key to change the first digit to '8'.
(3) Next press the **'Save'** key. The black cursor will move up one column.
(4) Press the **(↑)** or **(↓)** key again and now select a '6'.
(5) Next press the **'Save'** key again moving the cursor up one more column.
(6) Continue this process until all four digits have been entered.
(7) After the final digit, pressing **'Enter'** will activate the parameters menu.
(8) The password is "8646".
(9) Scroll left or right by pressing the **(←)** or **(→)** keys.
(10) Change values by pressing the **(↑)** or **(↓)** keys.
Press **'Save'** key to save new changes. Please note that display must show **"MACHINE OFF"**

DATE & TIME SETTING

ITEM (G) (1) Press the **(←)** key together with the **(→)** key to activate time setting.
(2) Press the **(↑)** to count up.
(3) Press the **(↓)** to count down.
(4) Press the **(←)** key to page left.
(5) Press the **(→)** key to page right.
(6) Press the **'Save'** key to save new time and date.

PROGRAMABLE MACHINE TYPES

ITEM (H)

(1) Shuttle Car
(2) Feeder Brake
(3) Continuous Miner
(4) Fan
(5) Jet Fan
(6) Drill
(7) Utility Vehicle
(8) Maintenance Vehicle
(9) Compressor
(10) Belt Drive
(11) Roof Bolter
(12) Flitting Panel
(13) Road Header
(14) AFC
(15) Belt Conveyer
(16) Pumps
(17) Circuit Breaker Feeder
(18) Toro
(19) Coal Cutter
(20) A/M Coal Cutter
(21) Loader
(22) General Purpose 1
(23) General Purpose 2
(24) General Purpose 3
(25) General Purpose 4

INPUTS

ITEM (I)

(1) Pilot - PR
(2) Pilot - CR
(3) Lockout
(4) Earth Leakage
(5) Three CT'S

OUTPUTS

ITEM (J)

(1) Control 'ON' Relay
(2) Short Circuit (S/C) Fault Relay
(3) Sequence Relay

SHORT CIRCUIT LATCH

ITEM (K)

(1) A Short Circuit "S/C" occurs, it will back trip the Transformer.
(2) The relay will latch out and keeps the fault in memory.
(3) There will be no power to the GEB's.
(4) Restore power by resetting the supply transformer.

RESET FAULTS

ITEM (L) (1) When any of the following faults occurred, Short Circuit (S/C), Earth Leakage (E/L), or Lockout (L/O).
(2) Switch Isolator to the **"OFF'"** position.
(2) Remove the outgoing plug & cable from socket. Plug and cable **Must** be tested – If pass the test.
(3) Before fitting the plug and cable to socket.
(4) Switch Isolator to "Test" position reset the fault. If fault does **Not** reset, the fault is inside the Gate End Box.
(5) If fault reset's, switch Isolator to the **"OFF"** position and plug in the cable.
(6) If the fault clears – restart the GEB.

SEQUENCE STARTING

ITEM (M) (1) Take unit 1 to 3 for sequencing.
(2) Unit 1 is the master. Unit 2 and 3 are the slaves.
(3) Unit 1 starts up (assuming all conditions are healthy), 15 seconds later unit 2, starts and another 20 seconds, later unit 3 starts.

The Parameters for the units should be as follows:-

Unit 1: Parameter **'Sequence'** set to **'15'** seconds. Parameter **'Pilot Start'** can be either setup for **'Local'** or **'Remote'.** The N/O contact of unit 1 Sequence Relay must be connected to the Start Input of unit 2.

Unit 2:- Parameter **'Sequence'** set to **'20'** seconds. Parameter **'Start'** must be set to **'Local'.**
The N/O contact of unit 2 Sequence Relay must be connected to the **'Start'** Input of unit 3.

Unit 3:- Parameter **'Sequence'** can be ignored as there is no fourth unit. Parameter **'Start'** must be set to **'Local'.**

RELAY SPECIFICATIONS

AUXILARY SUPPLY:	4 X 12vac @ 50hz
RECOMMENDED CONTROL TRANSFORMER:	60VA
CONTROL ON RELAY CONTACR RATING:	16A 250vac AC1
SEQUENCE RELAY CONTACT RATING:	16A 250vac AC1
ISOLATION VOLTAGE:	5000 V/rms
RECOMMENDED AMBIENT OPERATING TEMPERATURE:	40 TO 85 DEG C
MAXIMUM PILOT CURRENTS :	250 mA @ 12vac
CURRENT TRANSFORMER RATING :	1 Amp @ 5 VA MIN
MAXIMUM LOGGED FAULTS:	64 Faults
POIS:	True

CPU FEATURES:-

(1) Watchdog timer (monitoring of CPU, reset will occur if CPU should go faulty or there is a hang on the software loop).
(2) 8 X 10 bit high speed analog to digital converter (used to measure ohms, amps, volts, etc).
(3) Power up timer (delay for CPU voltage to be correct before program will commence).
(4) brown out detection (CPU voltage monitoring).
(5) Flash CPU program memory (useful for upgrading to newer version).
(6) CPU operating temperature –40 DEG C TO +125 DEG C

FAULT DIAGNOSTICS

FAULTS	POSSIBLE CAUSES	SOLUTION
Phase Unbalance..	Faulty CT. Phase Missing. Faulty Motor	Test wiring to CT. Test Main Fuses. Test Motor and Cable.
Short Circuit.	Faulty Motor. Faulty Cable.	Replace Motor. Replace Cable.
Overload Trip	Incorrect Motor Settings. Motor Bearing Failure.	Check Motor Setting on Keypad. Replace Motor.
Under Current	Incorrect Settings.	Change Settings for U/C.
Short Circuit S/C Fault	Motor or Cable Fault. Incorrect Settings	Test Motor and Cable. Change Motor Setting
Local/Remote Fault	Check Settings, Local or Remote	Change Settings.
Pilot PR or CR Open > 70Ω	Test Pilot Voltage	Test PPM Fuse and Relay Fuses.
Earth Leakage Fault	Motor Fault. Cable Fault.	Megger Cable. Megger Motor. **Carry out instruction as in Paragraph (K)**
Core Balance Fault	Faulty Core Balance. Test Wires from Core Balance to Relay	Replace. Repair.
Lockout Fault	Motor or Cable Phase to Earth. Incorrect Lockout Settings	Replace. Change in Keypad. **Carry out instruction as in Paragraph (K)**
Loss of Vacuum Back Trip	Faulty Vacuum Bottle.	Replace Vacuum Contactor. **Carry out instruction as in Paragraph (K)**
Frozen Contactor	Faulty Contactor Contacts	Replace contactor. **Carry out instruction as in Paragraph (K)**
Memory Fault	Check Cable from Relay to Keypad. Faulty Relay	Replace or Fix. Replace.
P.O.I.S. Fault	30Ω Resistor bridge out. Start Button Stuck in the Start Position	Remove Bridge. Repair.

FACTORY DEFAULT PARAMETERS

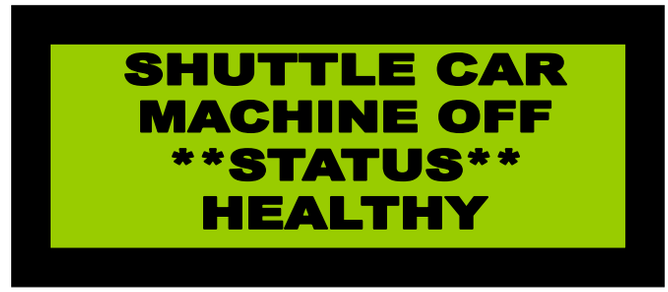
MACHINE TYPE	E/L MA	L/O	O/L MODE	O/L RESET	POIS	O/L CURVE	S/C	CT RATIO	FLC	UNDER I	LOC REM	SEQ TIME	ANTI INCH
SHUTTLE CAR	90	10	INST	MAN	DIS	5	600	200:1	80	0	LOC	5	2
FEEDER BREAKER	90	10	INST	MAN	DIS	5	600	200:1	80	0	LOC	5	2
JET FAN 5KW	90	10	INST	MAN	DIS	5	800	50:1	4	0	REM	5	2
FAN 15KW	90	10	INST	MAN	DIS	5	800	50:1	12	0	REM	5	2
FAN 37KW	90	10	INST	MAN	DIS	5	800	50:1	28	0	REM	5	2
MAINTENAN VEHICLE	90	10	INST	MAN	DIS	5	600	200:l	48	0	LOC	5	2
COMPRESSOR 75KW	90	10	INST	MAN	DIS	5	600	200:1	56	0	LOC	5	2
COMPRESSOR 90KW	90	10	INST	MAN	DIS	5	600	200:1	64	0	LOC	5	2
BELT DRIVE 75KW	90	10	INST	MAN	DIS	5	600	200:1	56	0	LOC	5	2
BELT DRIVE 110KW	90	10	INST	MAN	DIS	5	600	200:1	80	0	LOC	5	2
ROOF BOLTER	90	10	INST	MAN	DIS	5	600	200:1	28	0	LOC	5	2
FLITTING PANEL	90	10	INST	MAN	DIS	5	600	200:1	100	0	LOC	5	2
PUMP 4KW	90	10	INST	MAN	DIS	5	600	50:1	4	0	REM	5	2
PUMP 7.5KW	90	10	INST	MAN	DIS	5	600	50:1	6	0	REM	5	2
PUMP 15KW	90	10	INST	MAN	DIS	5	600	50:1	12	0	REM	5	2
TORO	90	10	INST	MAN	DIS	5	600	200:1	80	0	LOC	5	2
C/BREAKER FEEDER	230	10	INST	MAN	DIS	5	800	300:1	198	0	LOC	5	2
COALCUTTER 90KW	90	10	INST	MAN	DIS	5	600	200:1	64	0	LOC	5	2
COALCUTTER 110KW	90	10	INST	MAN	DIS	5	600	200:1	80	0	LOC	5	2
AM COAL CUTTER	90	10	INST	MAN	DIS	5	600	200:1	84	0	LOC	5	2
TRAMMING GENERATOR	90	10	INST	MAN	DIS	5	600	200:1	92	0	LOC	5	2
DRILL RIG	90	10	INST	MAN	DIS	5	600	200:1	28	0	LOC	5	2
GENERAL PURPOSE 1	90	10	INST	MAN	DIS	5	600	300:1	150	0	REM	5	2
GENERAL PURPOSE 2	90	10	INST	MAN	DIS	5	600	300:1	150	0	REM	5	2
GENERAL PURPOSE 3	90	10	INST	MAN	DIS	5	600	300:1	150	0	REM	5	2

NOTE: (1) CIRCUIT BREAKER FEEDER HAS ONE EXTRA PARAMETER WHICH IS E/L DELAY TIME AND IS SET TO 900 ms BY DEFAULT.
(2) ALL ABOVE PARAMETERS ARE FOR 1000VAC SUPPLY, FOR 525V PLEASE EDIT PARAMETERS AND CHANGE MOTOR FULL LOAD CURRENT.

KEYPAD FUNCTIONS

MAIN MENU

MACHINE TYPE MAY VARY

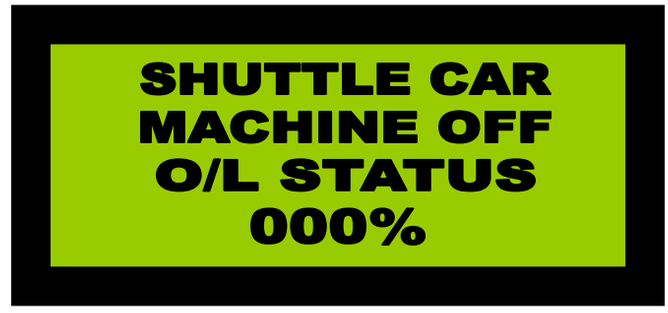


MENU KEY

BY PRESSING THE MENU KEY ONCE THE PHASE CURRENTS CAN BE VIEWED

MENU KEY

PRESS THE MENU KEY AGAIN. THE O/L STATUS WILL BE DISPLAYED.
NB:- 100% WILL TRIP THE OVERLOAD.

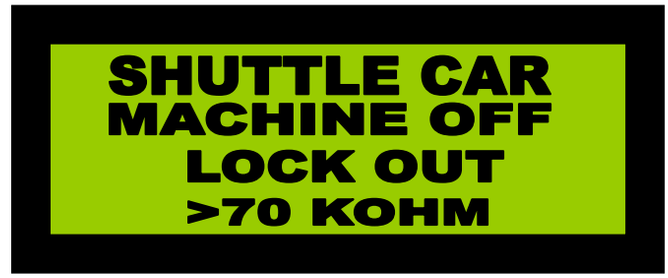


MENU KEY

PRESS THE MENU KEY AGAIN. THE EARTH LEAKAGE CURRENT WILL BE DISPLAYED.

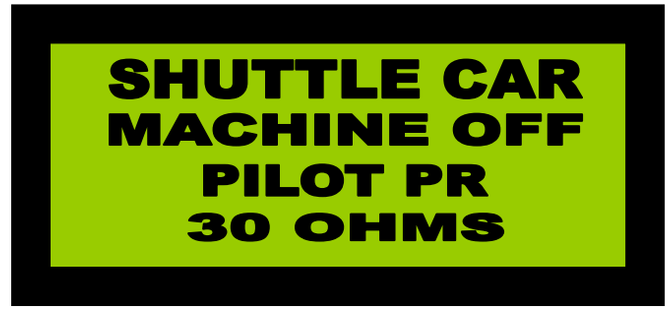
MENU KEY

PRESS THE MENU KEY AGAIN. THE LOCK OUT PHASE TO EARTH RESISTANCE WILL BE DISPLAYED IN Kohms.



MENU KEY

PRESS THE MENU KEY AGAIN. THE PILOT PR RESISTANCE TO EARTH WILL BE DISPLAYED IN Ohms.



MENU KEY

PRESS THE MENU KEY AGAIN. THE PILOT CR RESISTANCE TO EARTH WILL BE DISPLAYED IN Ohms.

MENU KEY

PRESS THE MENU KEY AGAIN. THE PERCENTAGE OF THE SUPPLY VOLTAGE IS DISPLAYED

MENU KEY

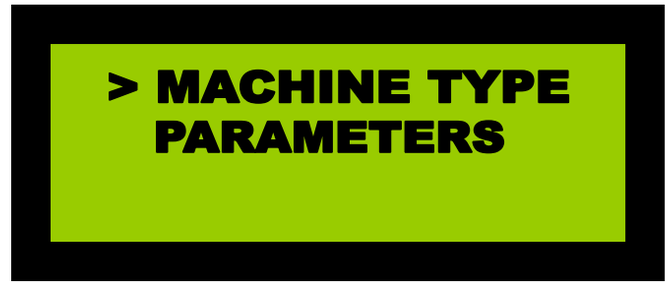
PRESS THE MENU KEY AGAIN. THE PRO2K-2 CONTROL VERSION WILL BE DISPLAYED.

MENU KEY

PRESS THE MENU KEY AGAIN. THE KEYPAD VERSION WILL BE DISPLAYED.
BY PRESSING AGAIN THE DEFAULT MENU WILL APPEAR.

PARAMETERS KEY

PRESS THE PARAMETER KEY
YOU WILL BE PROMPTED WITH “MACHINE TYPE” OR PARAMETERS”. PRESS THE UP OR DOWN KEY TO SELLECT.
PRESS THE SAVE KEY TO ACCEPT CJHOICE.

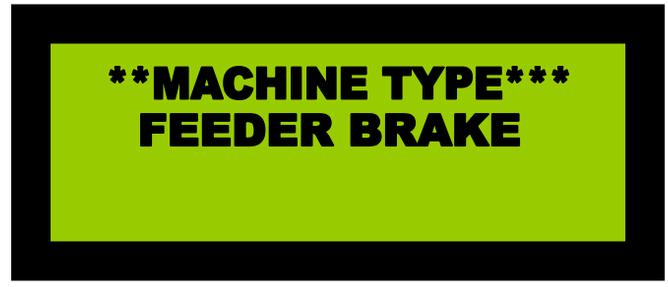


ENTERING LOW PRIORITY PASSWORD

A FOUR DIGIT PASSWORD MENU WILL APPEAR
PRESS THE UP KEY TO COUNT UP AND THE DOWN KEY TO COUNT DOWN.
THE SAVE KEY ADVANCES TO THE NEXT DIGIT. ONCE THE FOUR DIGITS ARE CORRECT PRESS THE SAVE KEY AGAIN.

MACHINE TYPE SELLECTION

PRESS THE UP OR DOWN KEY TO SELLECT MACHINE OF CHOICE.
REFER TO PAGE 5 TO VIEW PROGRAMABLE MACHINE TYPES.

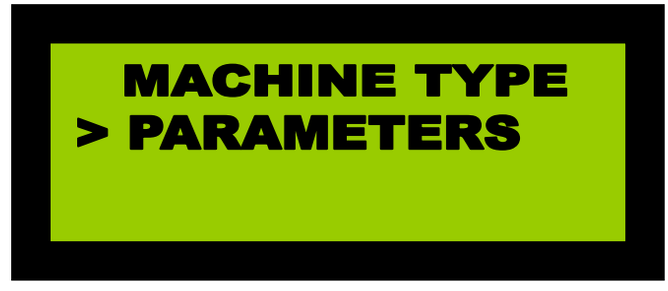


SAVING SELLECTION

PRESS THE SAVE KEY TO SAVE MACHINE OF CHOICE.
SAVING WILL APPEAR FOR A FEW SECONDS. AND THEN THE MAIN MENU WILL APPEAR AGAIN.

ENTERING PARAMETERS

PRESS THE PARAM KEY AND THEN THE DOWN KEY TO MOVE CURSOR TO THE PARAMETERS TEXT. THEN PRESS THE SAVE KEY.



ENTERING HIGH PRIORITY PASSWORD

A FOUR DIGIT PASSWORD MENU WILL APPEAR
PRESS THE UP KEY TO COUNT UP AND THE DOWN KEY TO COUNT DOWN.
THE SAVE KEY ADVANCES TO THE NEXT DIGIT. ONCE THE FOUR DIGITS ARE CORRECT PRESS THE SAVE KEY AGAIN.

ENTERING EARTH LEAKAGE

PRESS THE UP KEY TO INCREMENT THE CURRENT. THE DOWN KEY WILL DECREMENT THE CURRENT. THE INCREMENTS ARE IN STEPS OF 1 ma. MAX CURRENT = 250 ma. MINIMUM CURRENT = 60 ma

ENTERING LOCK OUT

PRESS THE RIGHT KEY FOR NEXT PARAMETER. UP KEY WILL INCREMENT IN STEPS OF 10 Kohm. DOWN KEY WILL DECREMENT IN STEPS OF 10 Kohm. MAX = 70 Kohm. MIN = 10 Kohm.

ENTERING OVERLOAD TYPE

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL SET INSTANT.
DOWN KEY WILL SET THERMAL.

ENTERING O/L RESET

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL SET AUTO.
DOWN KEY WILL SET MANUAL.

ENTERING POIS

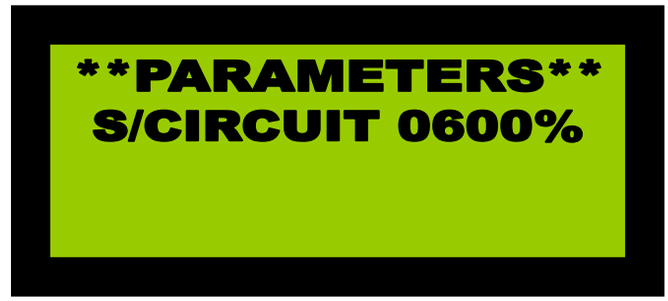
PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL SET ENABLE.
DOWN KEY WILL SET DISABLE.
POIS STANDS FOR PREVENTION OF
INADVERTENT START.

ENTERING O/L CLASS TYPE

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT O/L CLASS CURVE.
DOWN KEY WILL DECREMENT O/L CLASS CURVE.
MIN = 1 AND MAX = 25
THIS WILL CHANGE THE O/L TRIP CURVES.

ENTERING SHORT CIRCUIT

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT IN STEPS OF 100%.
DOWN KEY WILL DECREMENT IN STEPS OF 100%
MAX = 1000 %
MIN = 200 %
SHORT CIRCUIT FAULT WILL OCCUR WHEN THE
PHASE CURRENT REACHES (FLC X S/CIRCUIT SETTING)



ENTERING CT RATIO

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT CT RATIO.
DOWN KEY WILL DECREMENT CT RATIO.
CT COMBINATIONS ARE AS FOLLOWS:-
50:1 100:1 300:1 400:1 800:1 1000:1

ENTERING FULL LOAD CURRENT

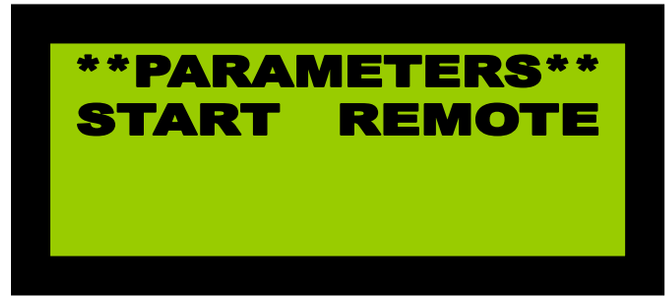
PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT CURRENT.
DOWN KEY WILL DECREMENT CURRENT.
INCREMENTS IS DEPENDANT ON CT RATIO.
MAX CURRENT = CT RATIO SETTING
MIN CURRENT = 0
INCREMENTS = (**SEE CT RATIOS PAGE 3**)

ENTERING UNDER CURRENT

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT CURRENT.
DOWN KEY WILL DECREMENT CURRENT.
INCREMENTS IS DEPENDANT ON CT RATIO.
MAX CURRENT = CT RATIO SETTING
MIN CURRENT = 0, ZERO WILL DISABLE UNDER
CURRENT MONITORING.

ENTERING START TYPE

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL SET REMOTE STARTING.
DOWN KEY WILL SET LOCAL STARTING.
SEE '**TYPICAL PILOT APPLICATIONS'**



ENTERING SEQUENCE TIME

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT TIME BY 1 SEC.
DOWN KEY WILL DECREMENT TIME BY 1 SEC.
MAX TIME = 200 Sec,
MIN TIME = 0 Sec.
THIS WILL BRING IN THE SEQUENCE RELAY,
AFTER THE MACHINE HAS BEEN STARTED AND THIS SET TIME HAS ELAPSED.

ENTERING ANTI-INCH TIME

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT IN STEPS OF 1 Sec.
DOWN KEY WILL DECREMENT IN STEPS OF 1 Sec
ANTI-INCH FUNCTION IS USED TO STOP THE
MACHINE FROM BEING STARTED AGAIN UNTIL
THE SET TIME HAS ELAPSED. THIS ALSO GIVES THE MOTOR BACK EMF TIME TO DISCHARGE.

ENTERING 1ST LOW PRIORITY DIGIT

PRESS THE RIGHT KEY FOR NEXT PARAMETER.
UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0
THE PASSWORD PARAMETER IS USED TO ACCESS THE PARAMETERS.
THE FIRST TIME THAT PARAMETERS ARE ACCESSED BY USER, THE DEFAULT PASSWORD IS “0000”. USER MAY CHANGE THIS PASSWORD.

ENTERING 2ND LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 3RD LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 4TH LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 5TH HIGH PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 6TH LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 7TH LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0

ENTERING 8TH LOW PRIORITY DIGIT

UP KEY WILL INCREMENT PASSWORD BY 1.
DOWN KEY WILL DECREMENT PASSWORD BY 1.
MAX VALUE = 9
MIN VALUE = 0
PRESS SAVE KEY TO SAVE ALL PARAMETERS.

VIEWING FAULT HISTORY

PRESS THE DOWN TOGETHER WITH THE UP KEY
RIGHT KEY WILL INCREMENT FAULT HISTORY.
LEFT KEY WILL DECREMENT FAULT HISTORY.
01 BEING THE MOST RECENT FAULT AND 63 THE OLDEST FAULT. WHEN FAULT HISTORY IS FULL,
THE OLDEST FAULT IS PUSHED OUT AND THE NEW FAULT BECOMES FAULT 01..
MENU KEY WILL BRING YOU BACK TO MAIN MENU.

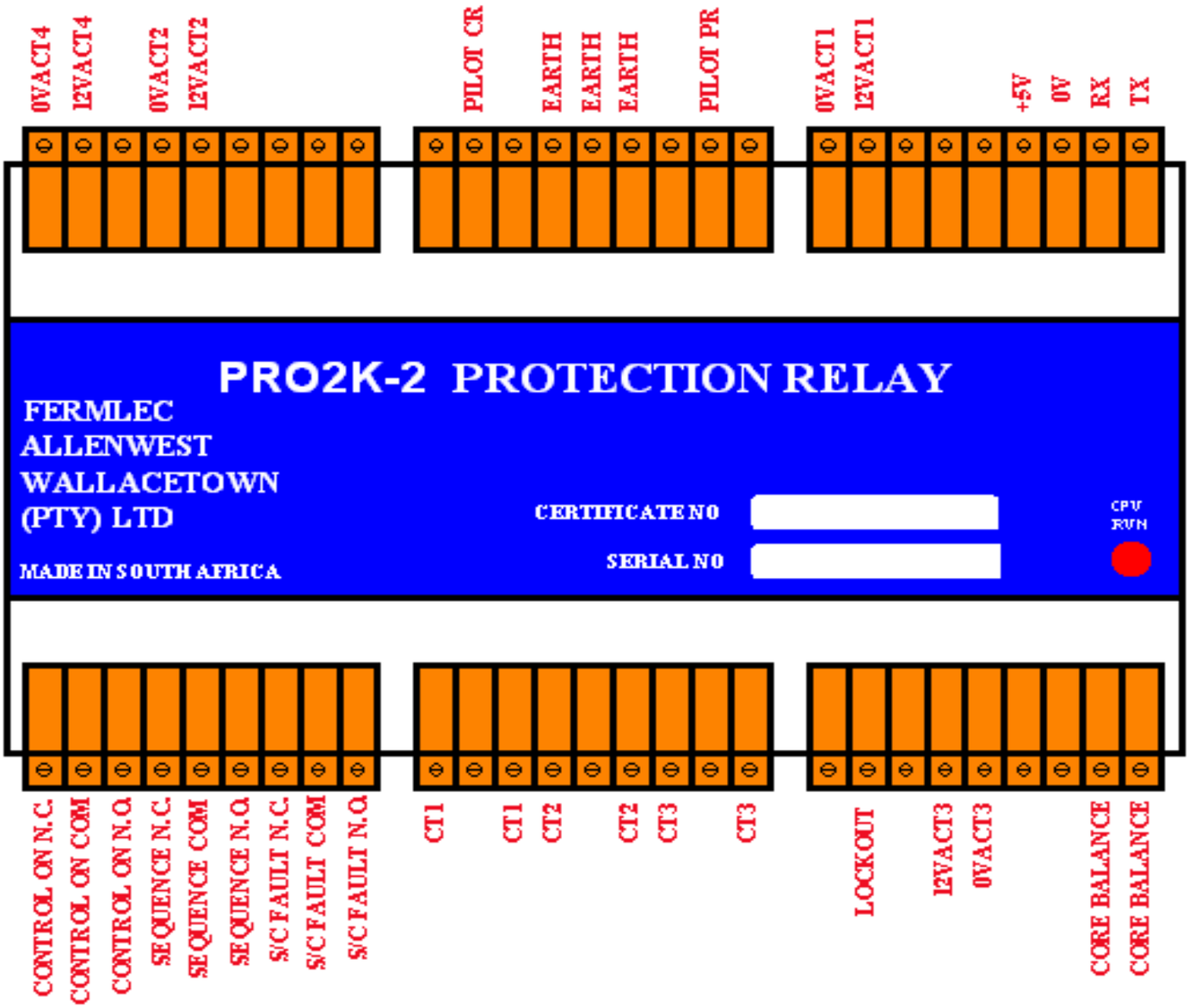
ENTERING TIME AND DATE

PRESS THE RIGHT TOGETHER WITH THE LEFT KEY. THIS WILL BRING UP THE TIME MENU.
UP KEY WILL INCREMENT WHAT IS BELOW THE 'V' CURSOR.
DOWN KEY WILL DECREMENT WHAT IS BELOW THE 'V' CURSOR.
RIGHT KEY MOVES THE 'V' CURSOR TO THE RIGHT AND THE DOWN KEY MOVES 'V' CURSOR TO THE LEFT. SAVE KEY SAVES THE ENTERED TIME AND DATE AND RETURNS TO MAIN MENU.

RESETTING FAULTS

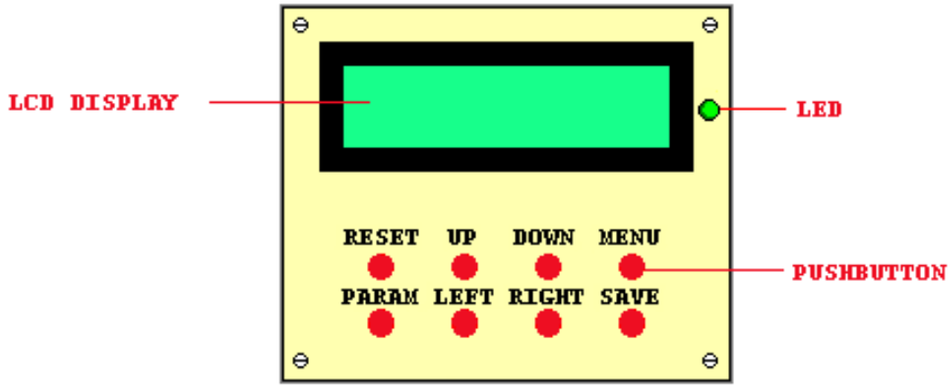
PRESS THE RESET KEY TO RESET FAULT.
RESETTING WILL APPEAR ON DISPLAY FOR A SHORT WHILE.
NOTE: MEMORY FAULT CAN ONLY BE RESET BY GOING INTO PARAMETERS MENU AND THEN SAVING IT.

RELAY PINOUT

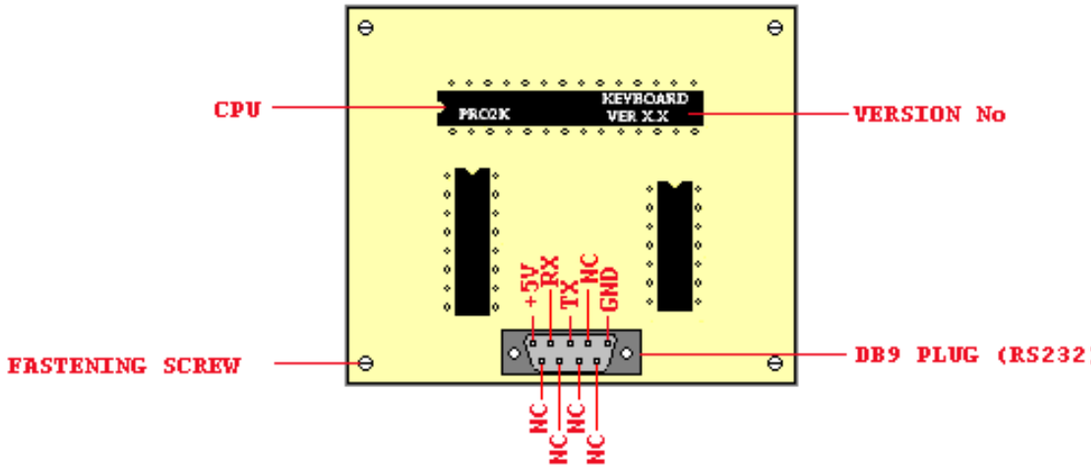


RELAY KEYPAD PIN OUT

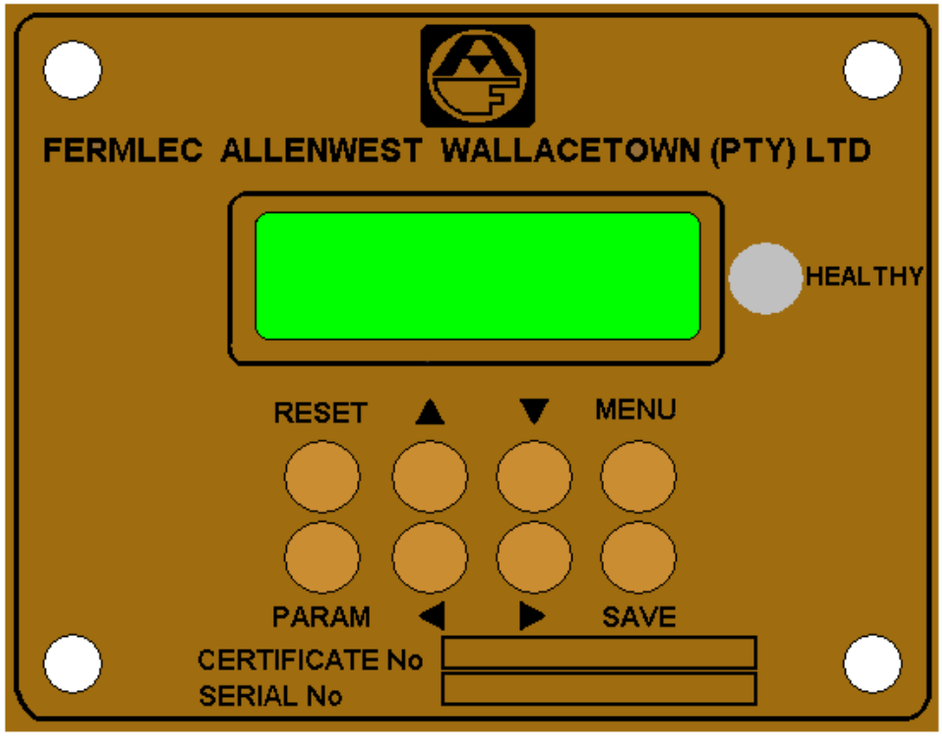
FRONT PANEL



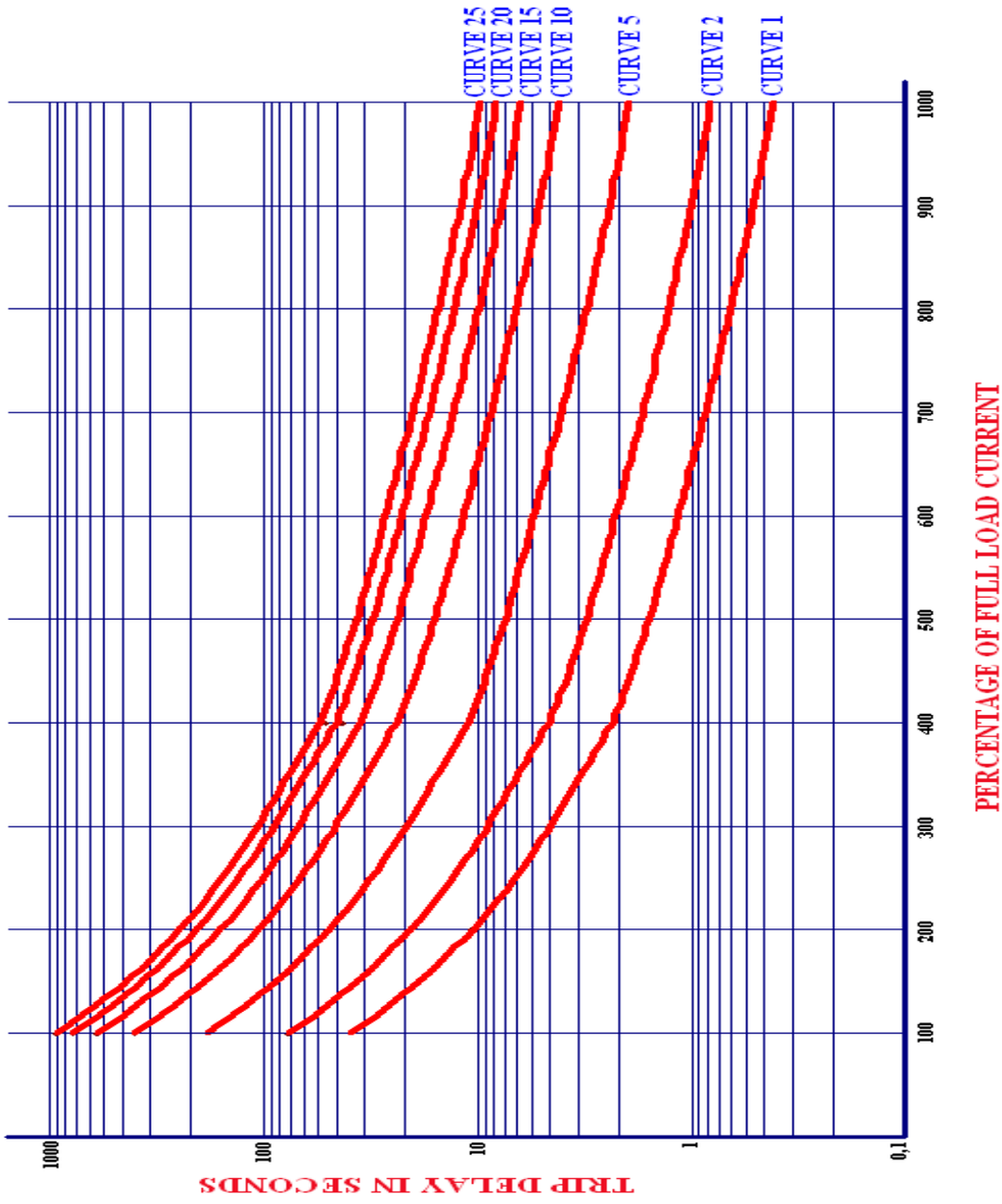
BACK PANEL



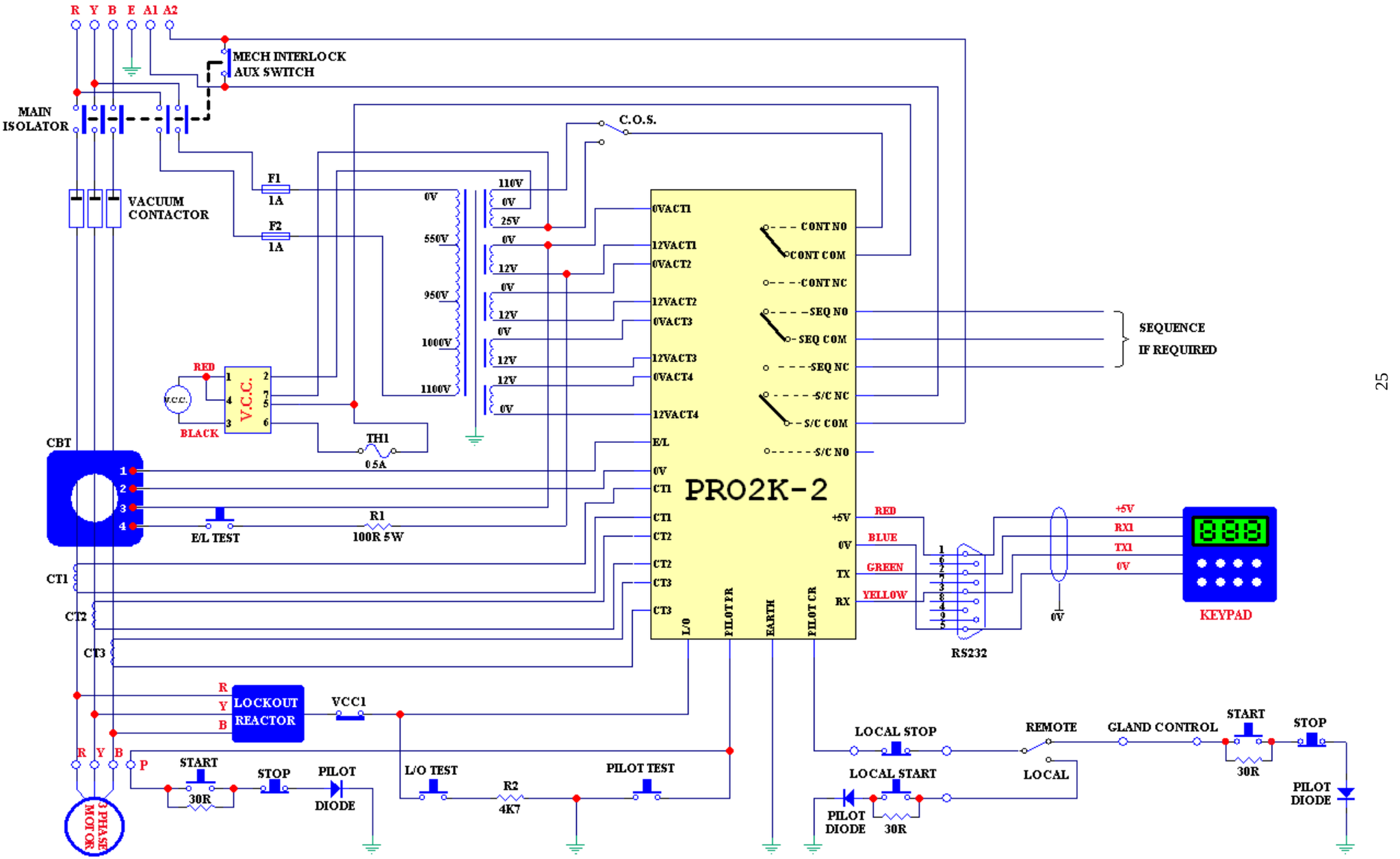
KEYPAD LABEL LAYOUT



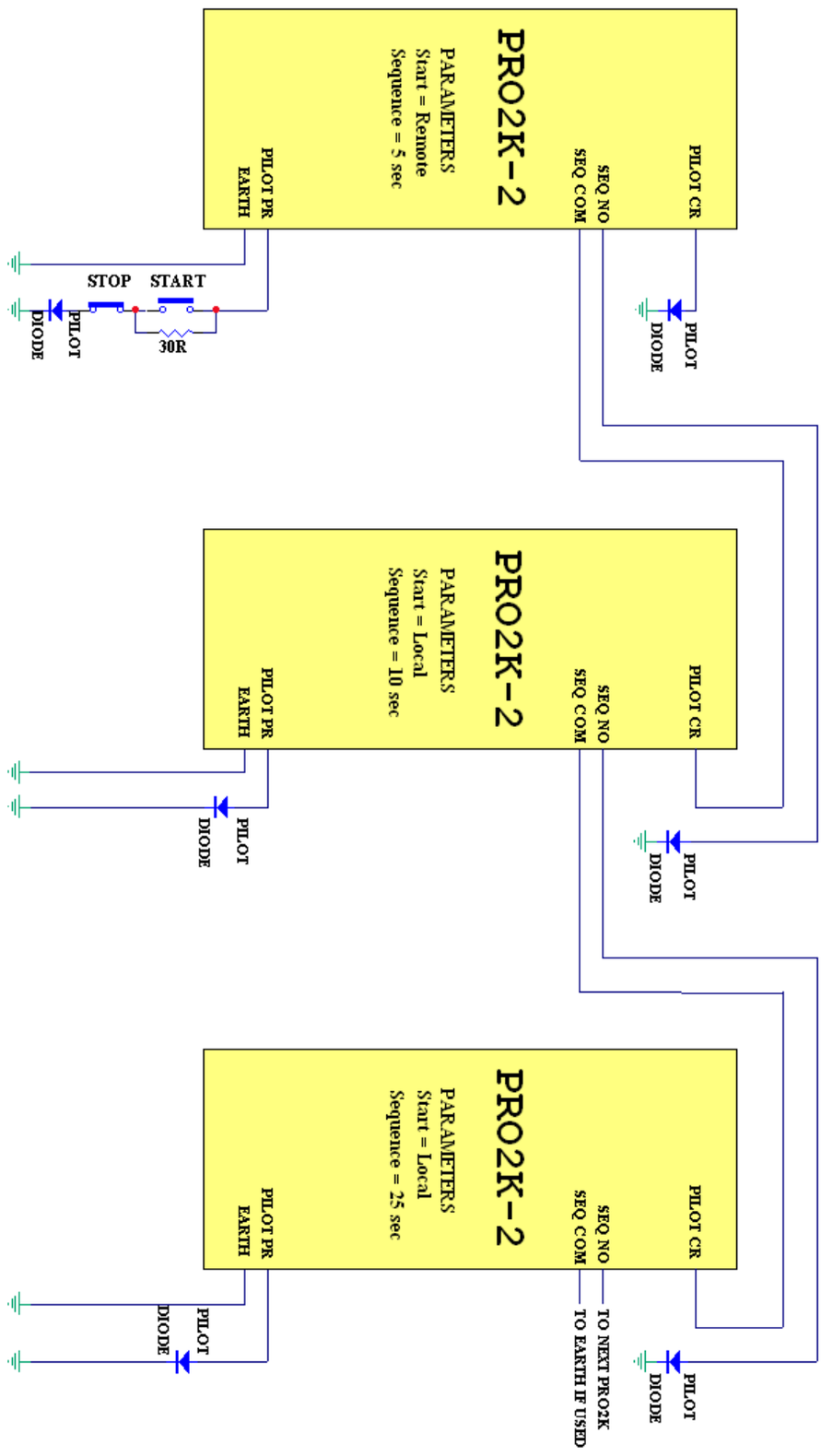
PRO2K-2 OVERLOAD CURVES



PRO2K-2 TYPICAL POWER CIRCUIT



SEQUENCING


PRO2K-2
PARAMETERS
Start = Remote
Sequence = 5 sec
PILOT PR
EARTH
SEQ NO
SEQ COM
PILOT CR
STOP
START
30R
DIODE
PILOT
PRO2K-2
PARAMETERS
Start = Local
Sequence = 10 sec
PRO2K-2
PARAMETERS
Start = Local
Sequence = 25 sec
TO NEXT PRO2K
TO EARTH IF USED

TYPICAL PILOT APPLICATIONS